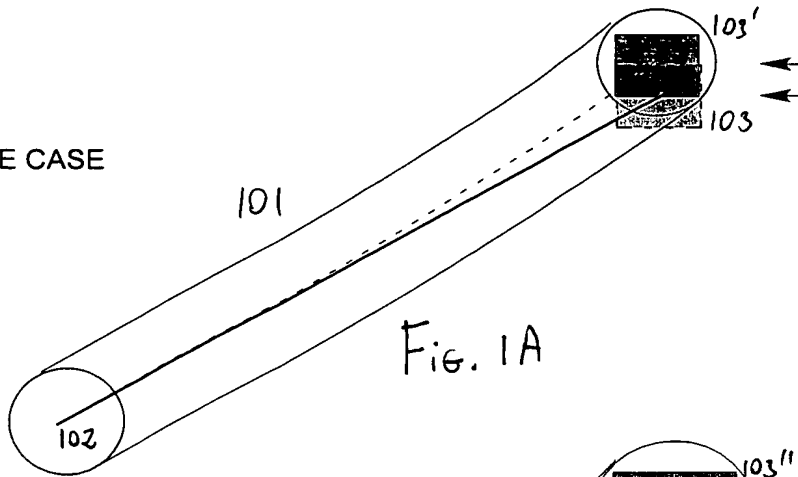
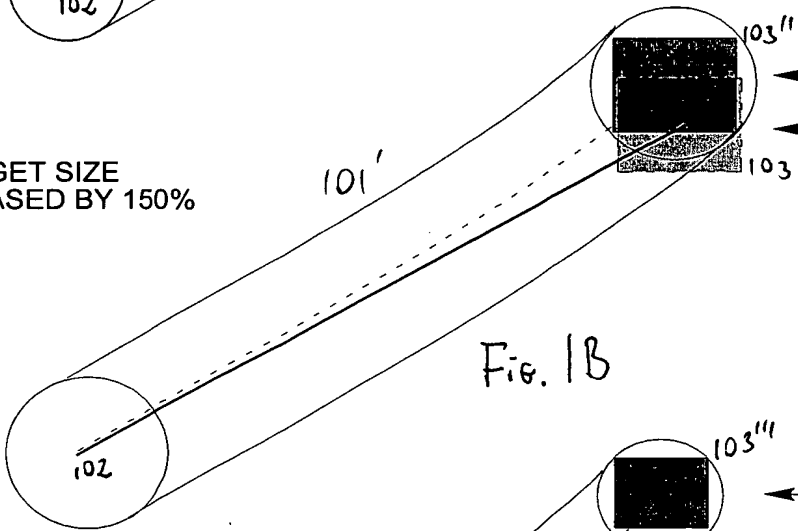


I. BASE CASE

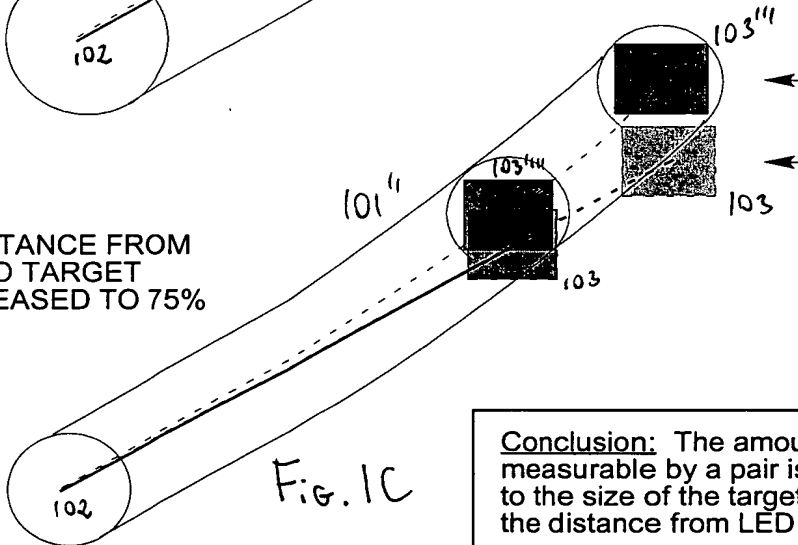


MAXIMUM  
MEASURABLE  
BEND IN TUBE

II. TARGET SIZE  
INCREASED BY 150%



III. DISTANCE FROM  
LED TO TARGET  
DECREASED TO 75%



TOTAL BEND  
OF TUBE  
WITH MAXIMUM  
DISPLACEMENT  
AT TARGET

Conclusion: The amount of bend measurable by a pair is proportional to the size of the target divided by the distance from LED to target.

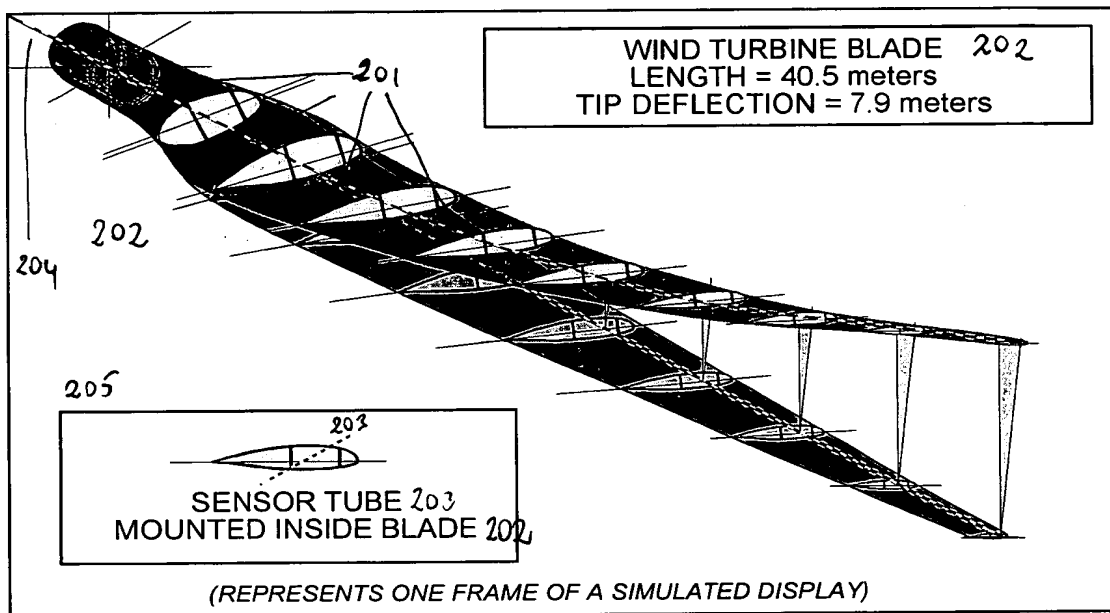


FIG. 2: ISOMETRIC VIEW OF WINDMILL BLADE  
WITH THE SENSOR TUBE AND EXTERNAL DISPLAY

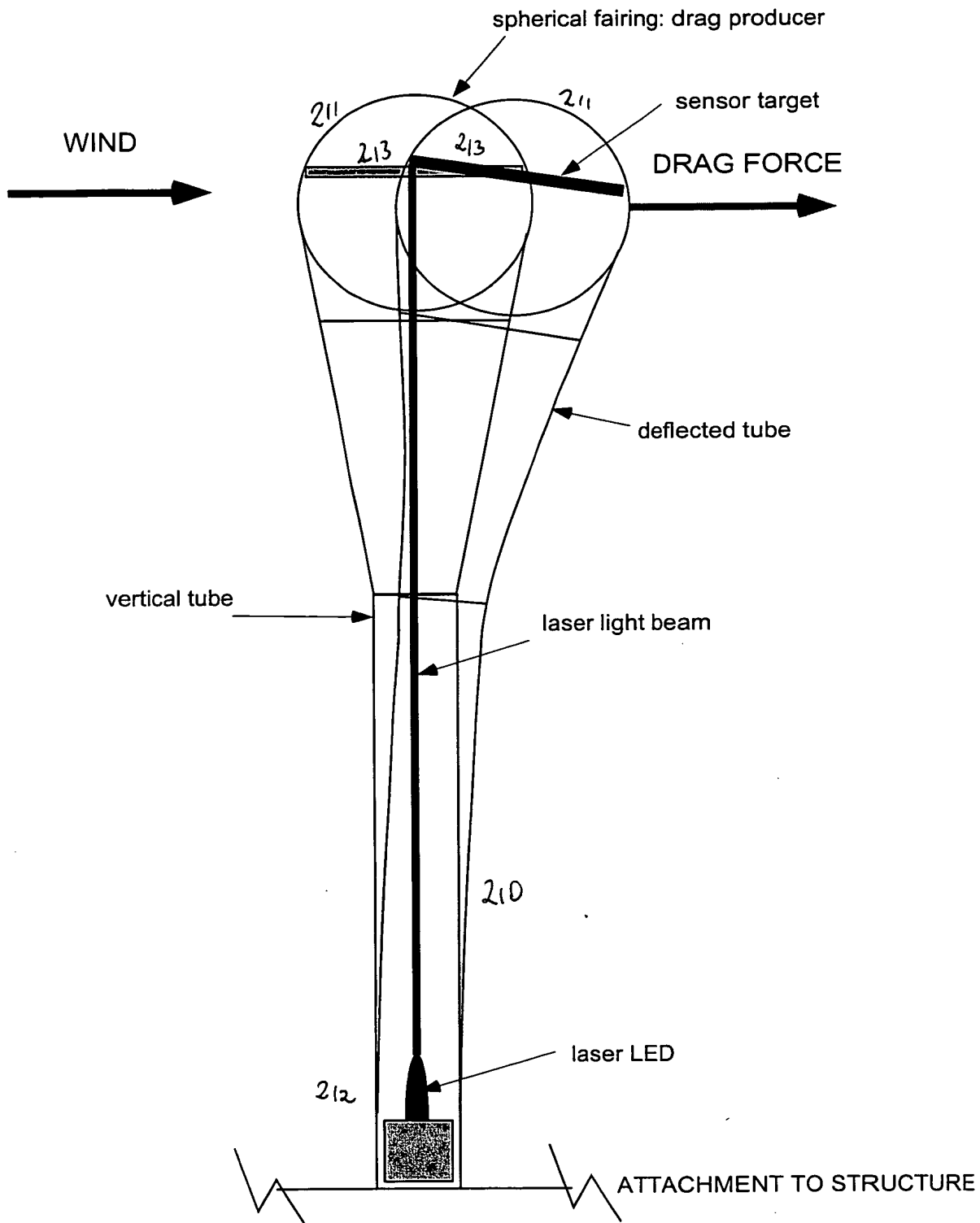


FIGURE 2a: ANEMOMETER DESIGN

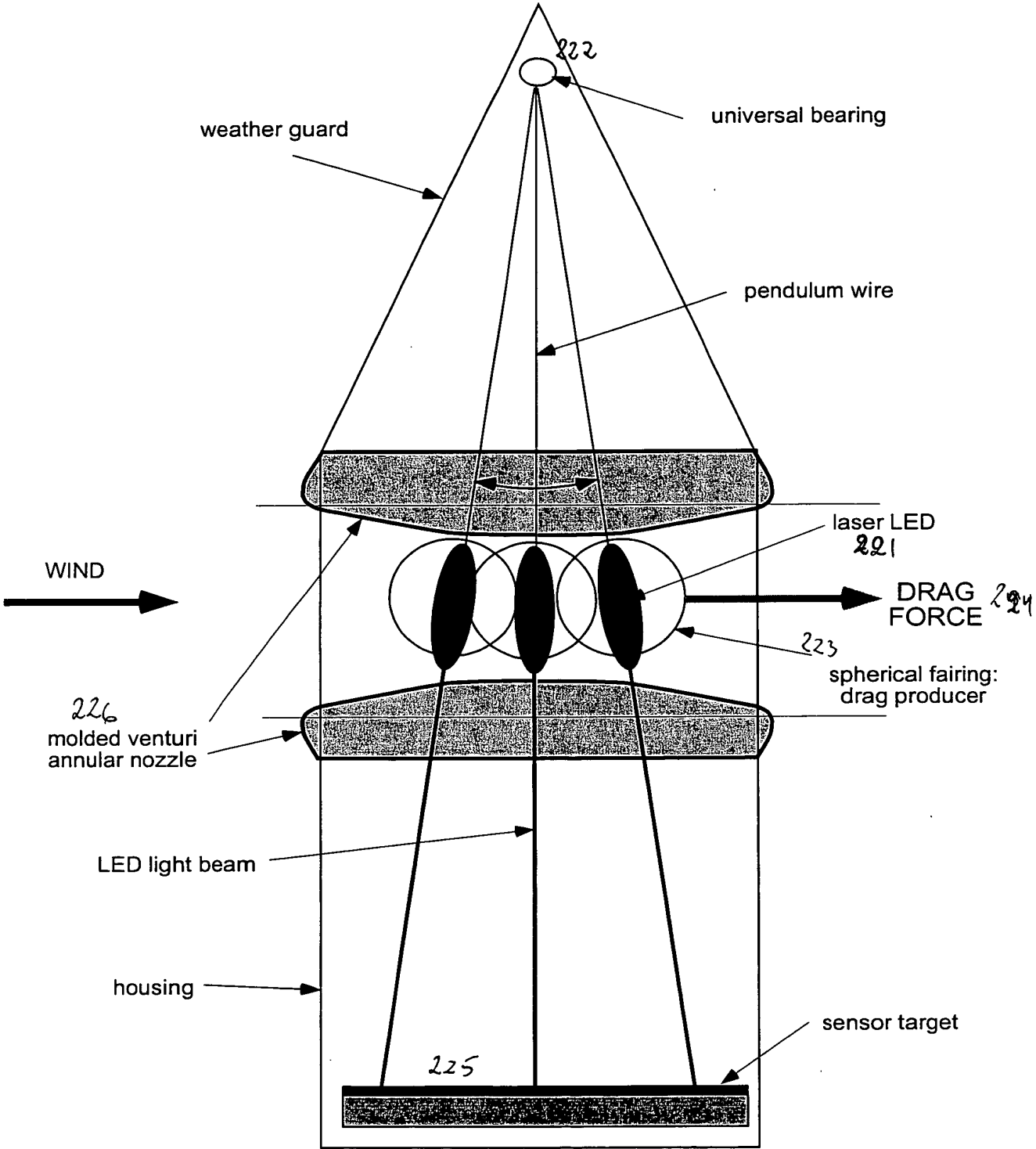


FIGURE 2b: ANEMOMETER DESIGN ALTERNATE

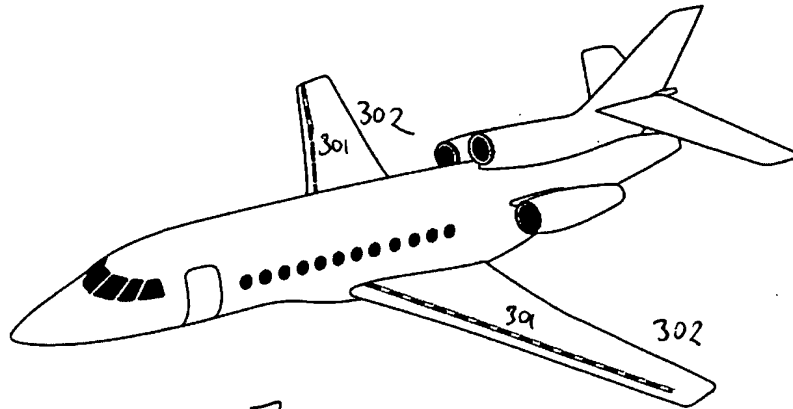


FIG. 3A

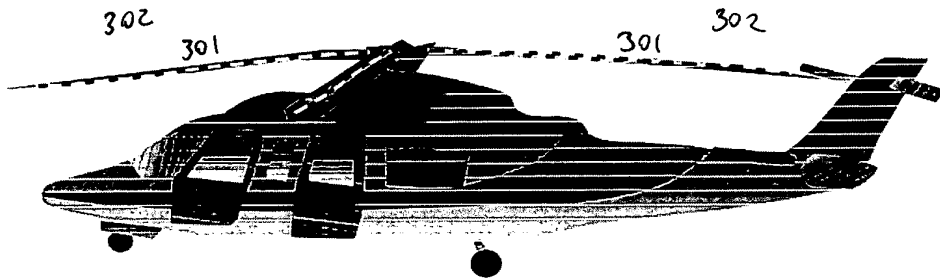
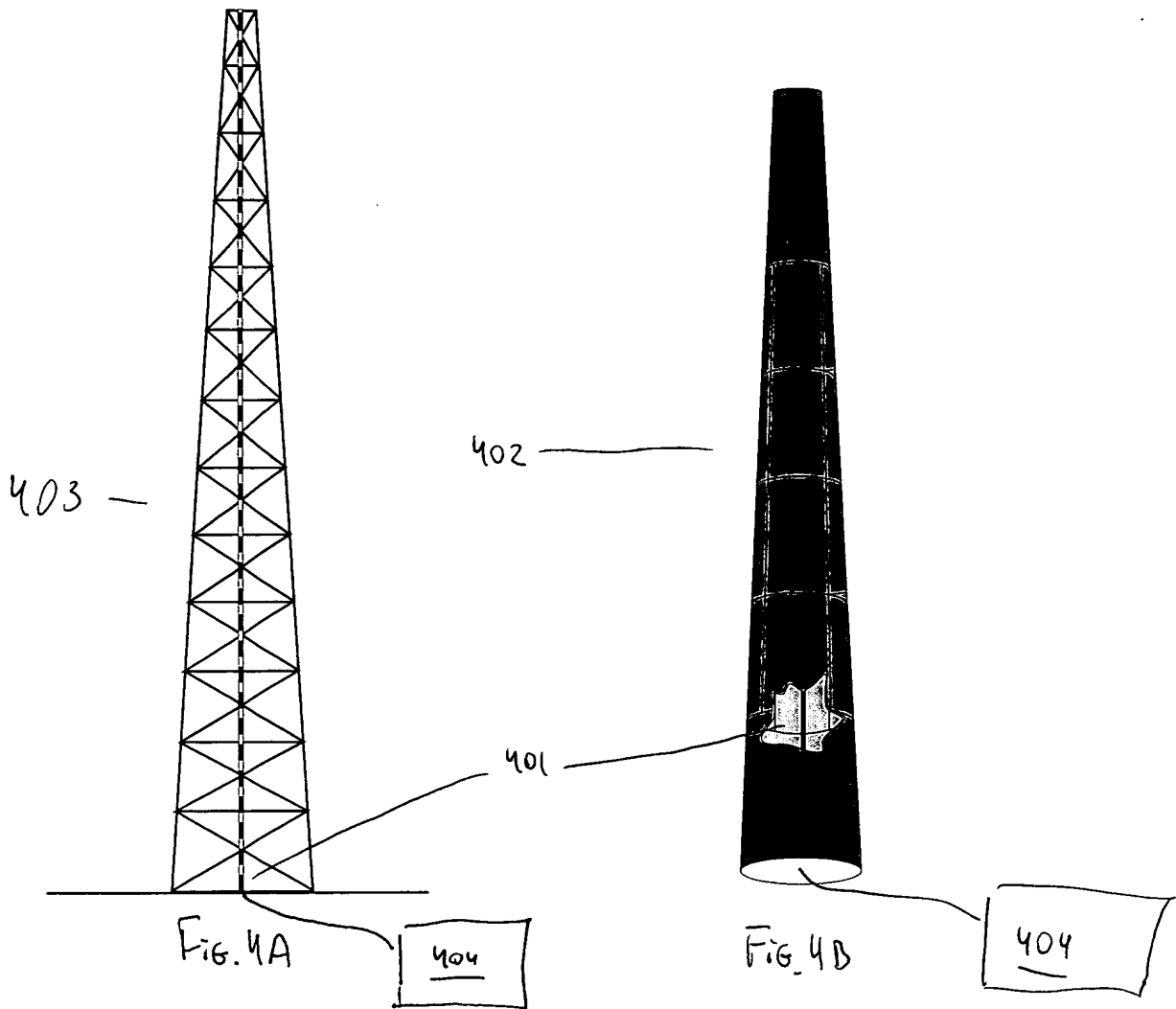


FIG. 3B AIRCRAFT APPLICATIONS



TOWER APPLICATIONS

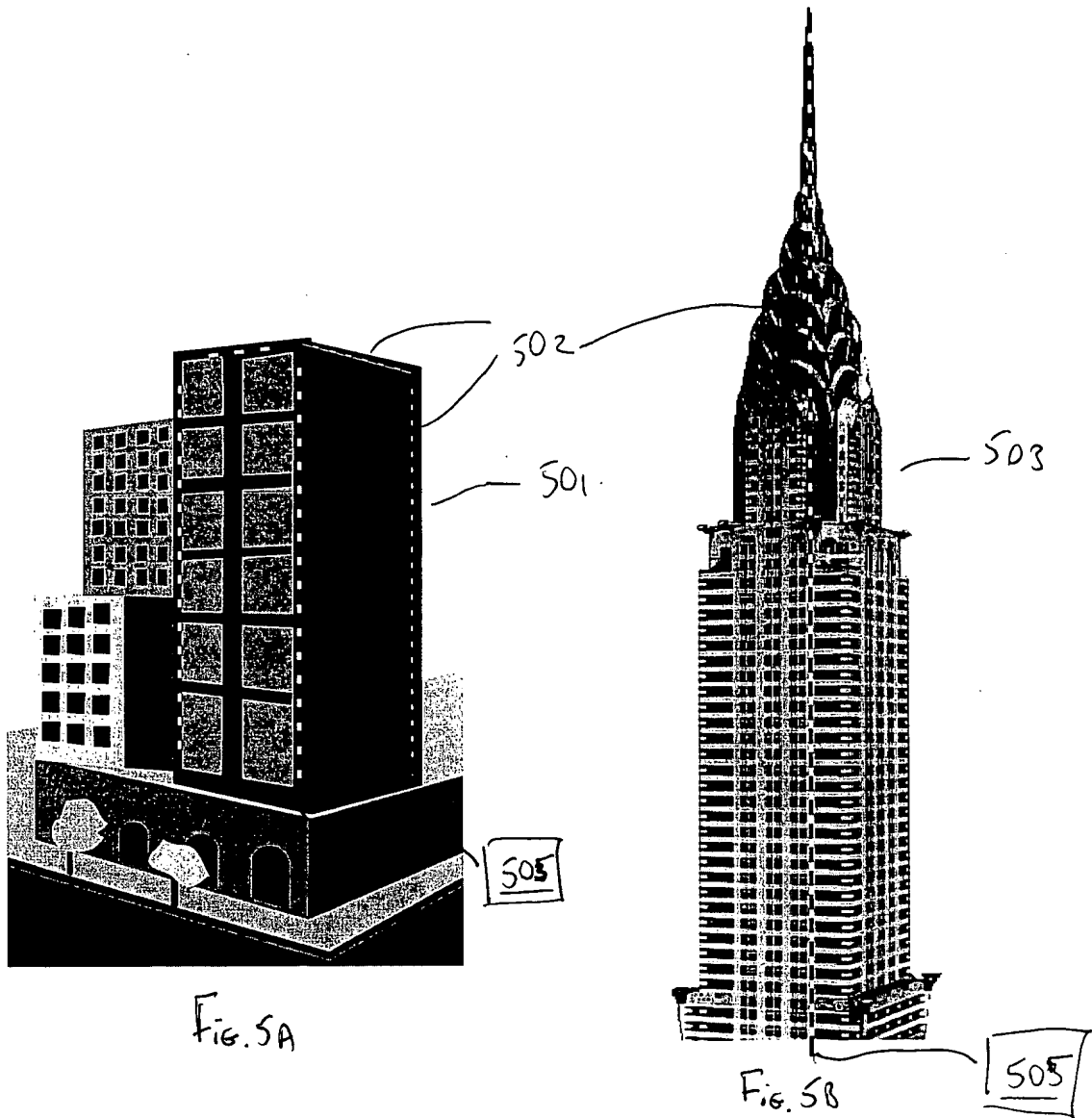


FIG. 5 BUILDING APPLICATIONS

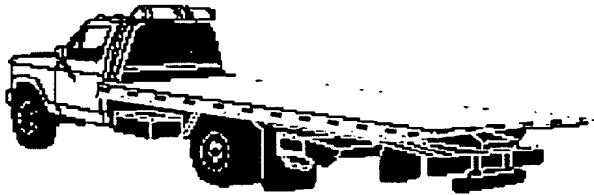


Fig 6A

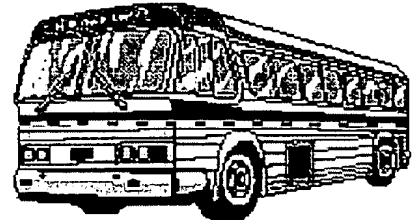


Fig 6B

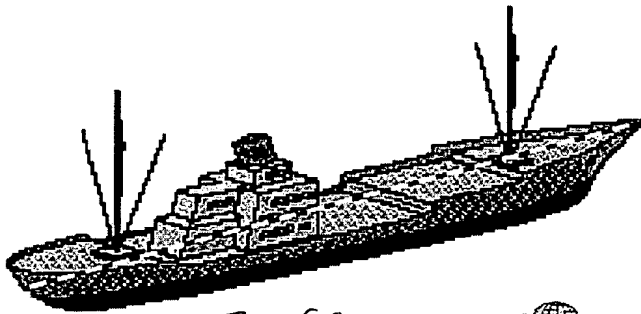


Fig 6C

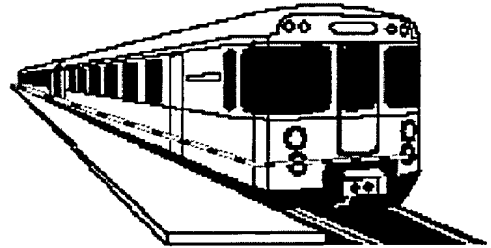


Fig. 6D

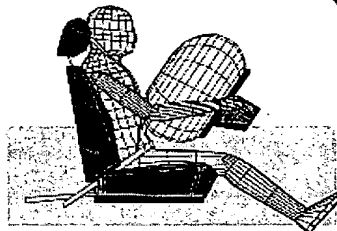


Fig. 6E

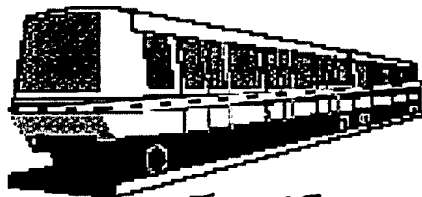


Fig. 6F

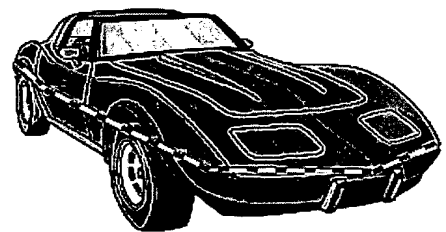


Fig 6G

TRANSPORTATION VEHICLE APPLICATIONS



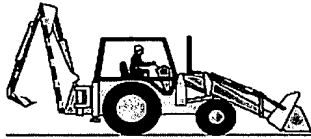


Fig. 7A

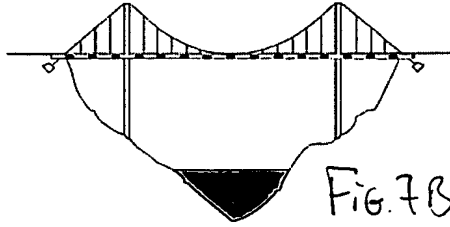


Fig. 7B

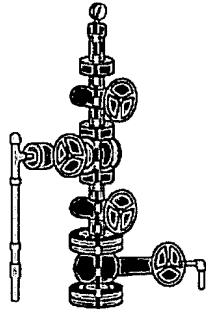


Fig. 7C

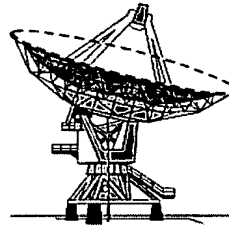


Fig. 7D

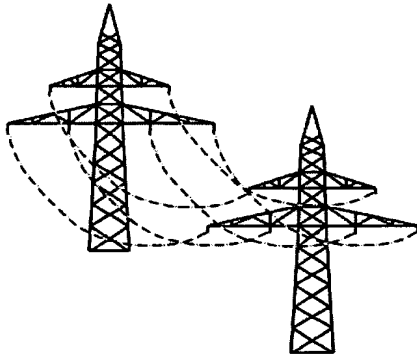


Fig. 7E

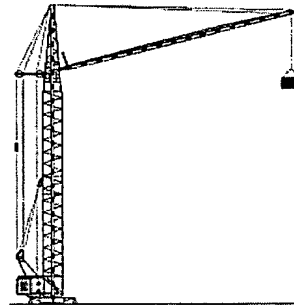


Fig. 7F

UTILITY LINE SAG MONITOR  
AND OTHER CIVIL ENGINEERING USES

Figure 8. Single Segment Sensor Pair

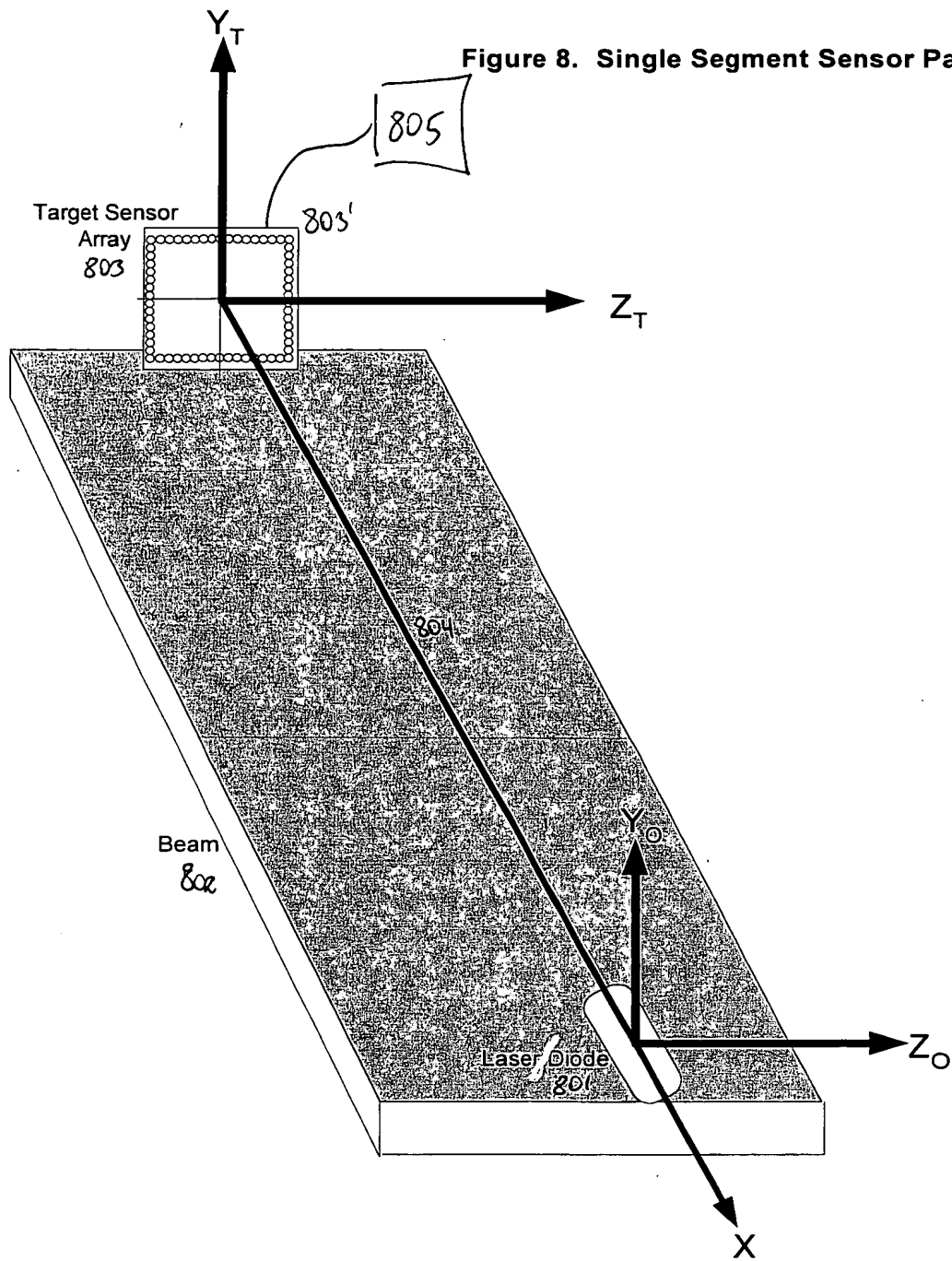
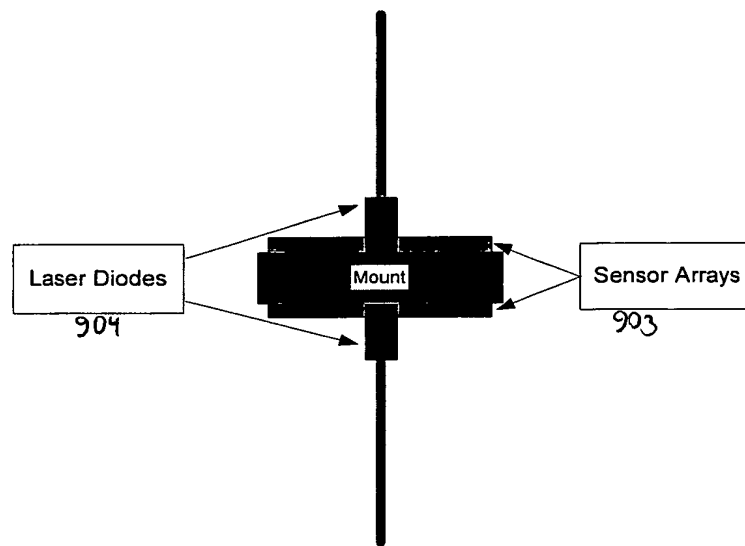
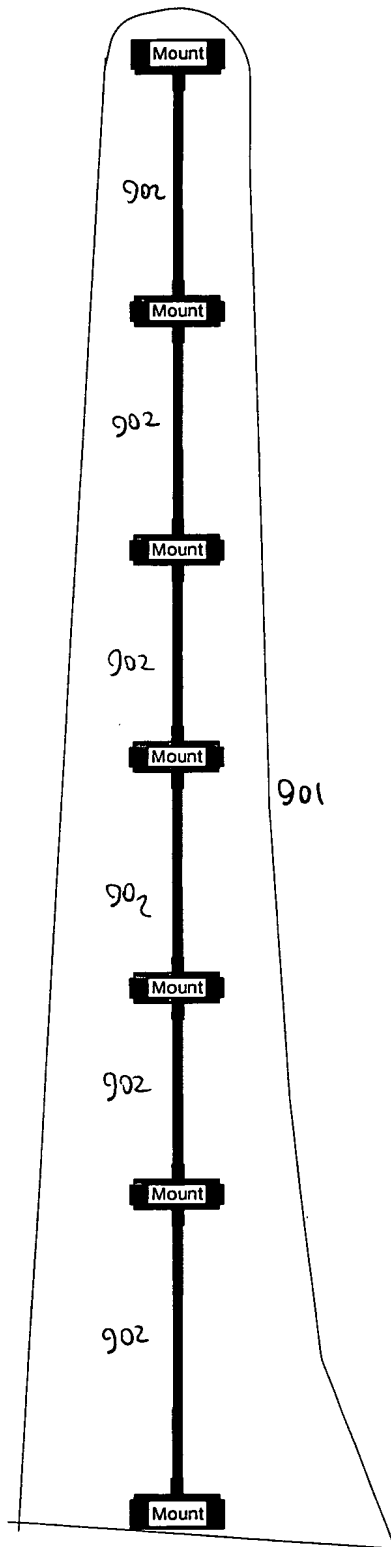


Figure 9.  
Wing Planform With Multi-Segment Sensor Pairs



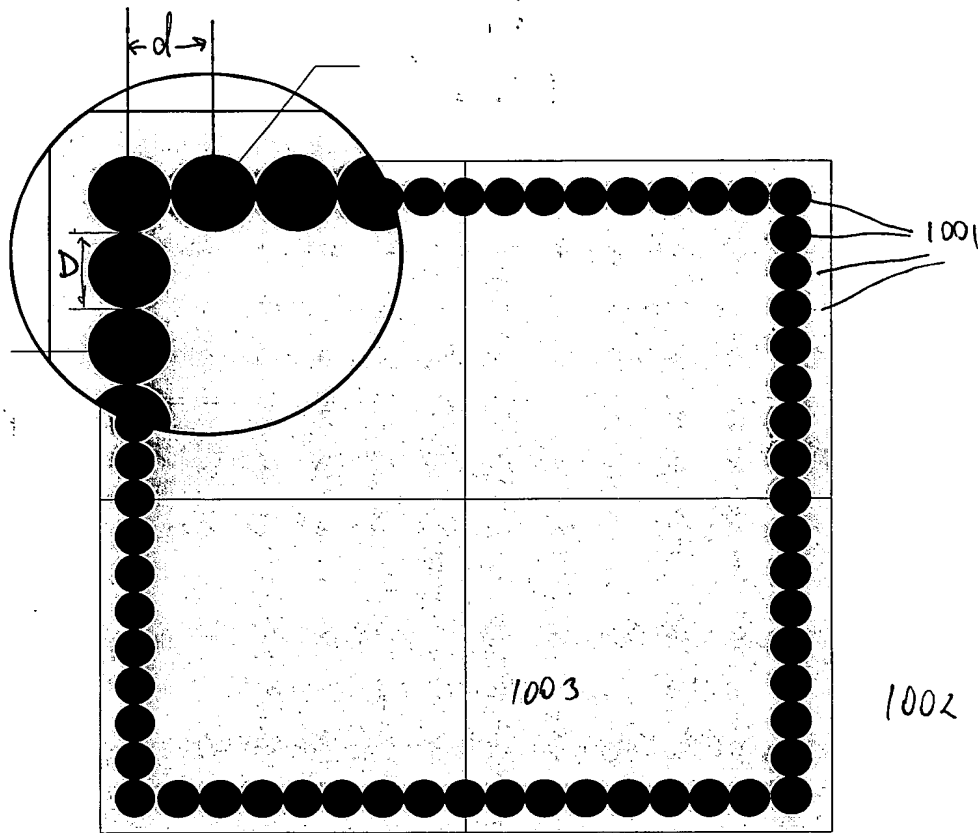


FIGURE 10: SENSOR TARGET ARRAY

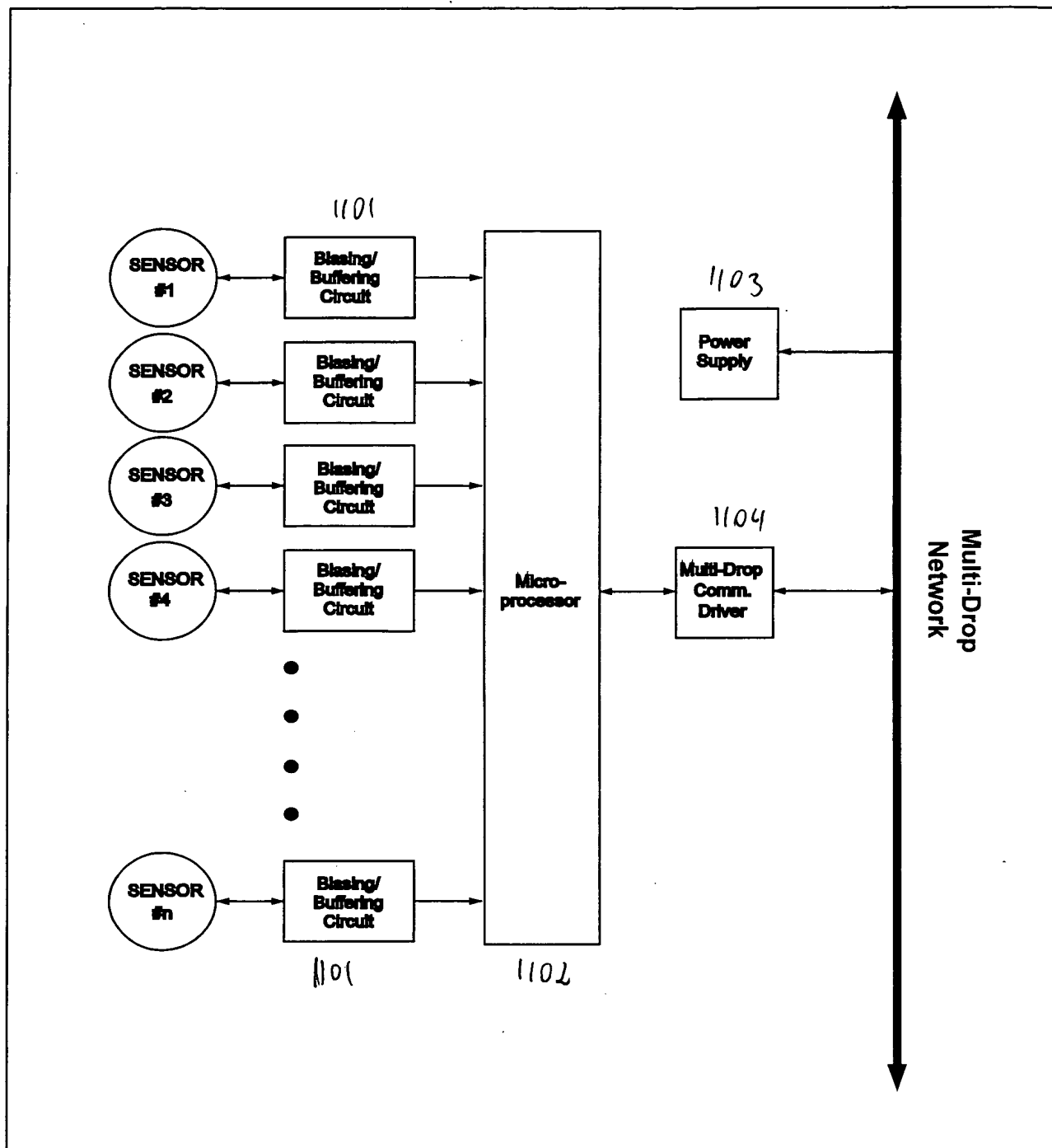


FIGURE 11: SENSOR CIRCUIT BLOCK DIAGRAM

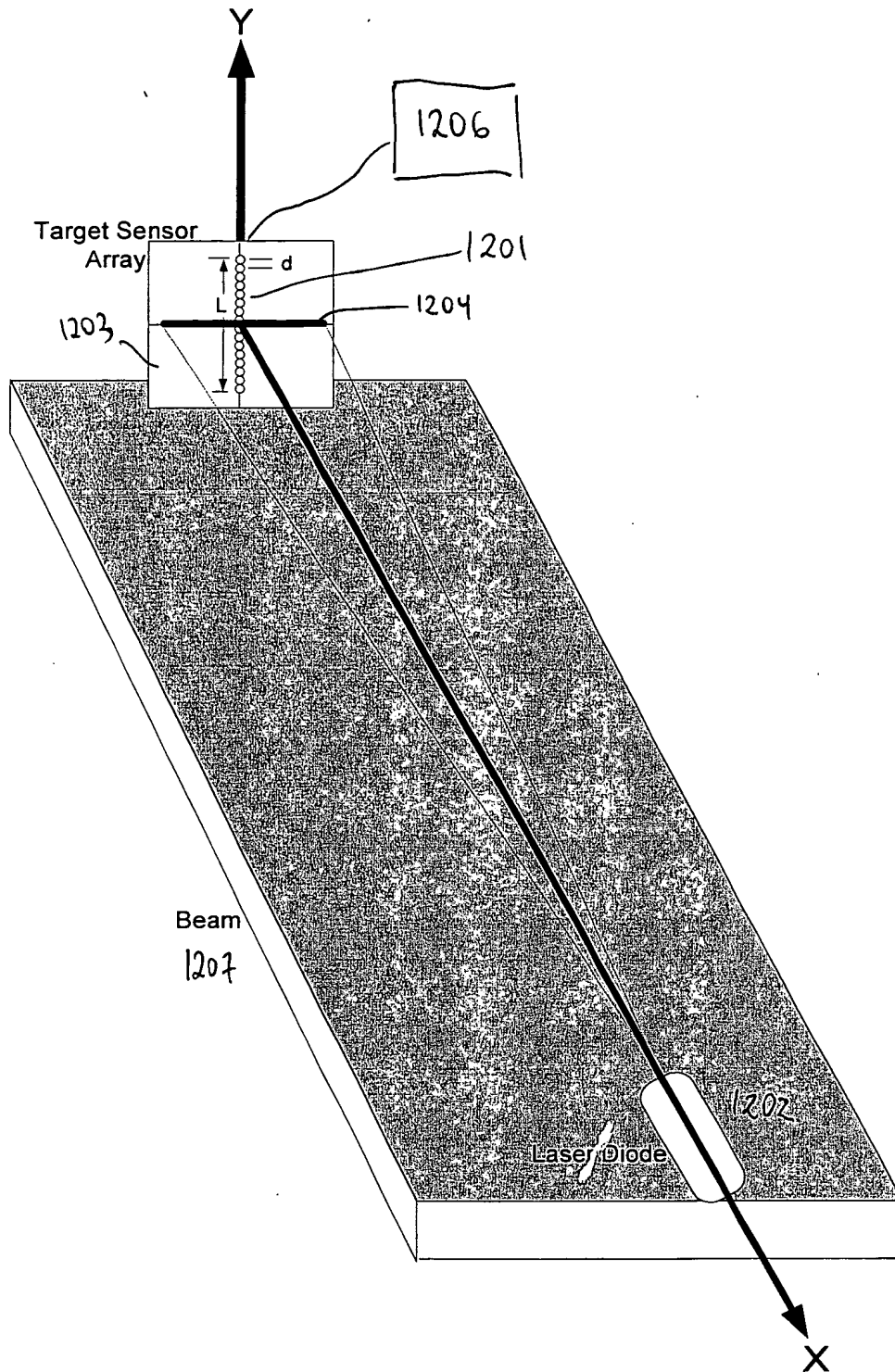


Figure 12.  
Single Segment, Single Axis Measurement Isometric View

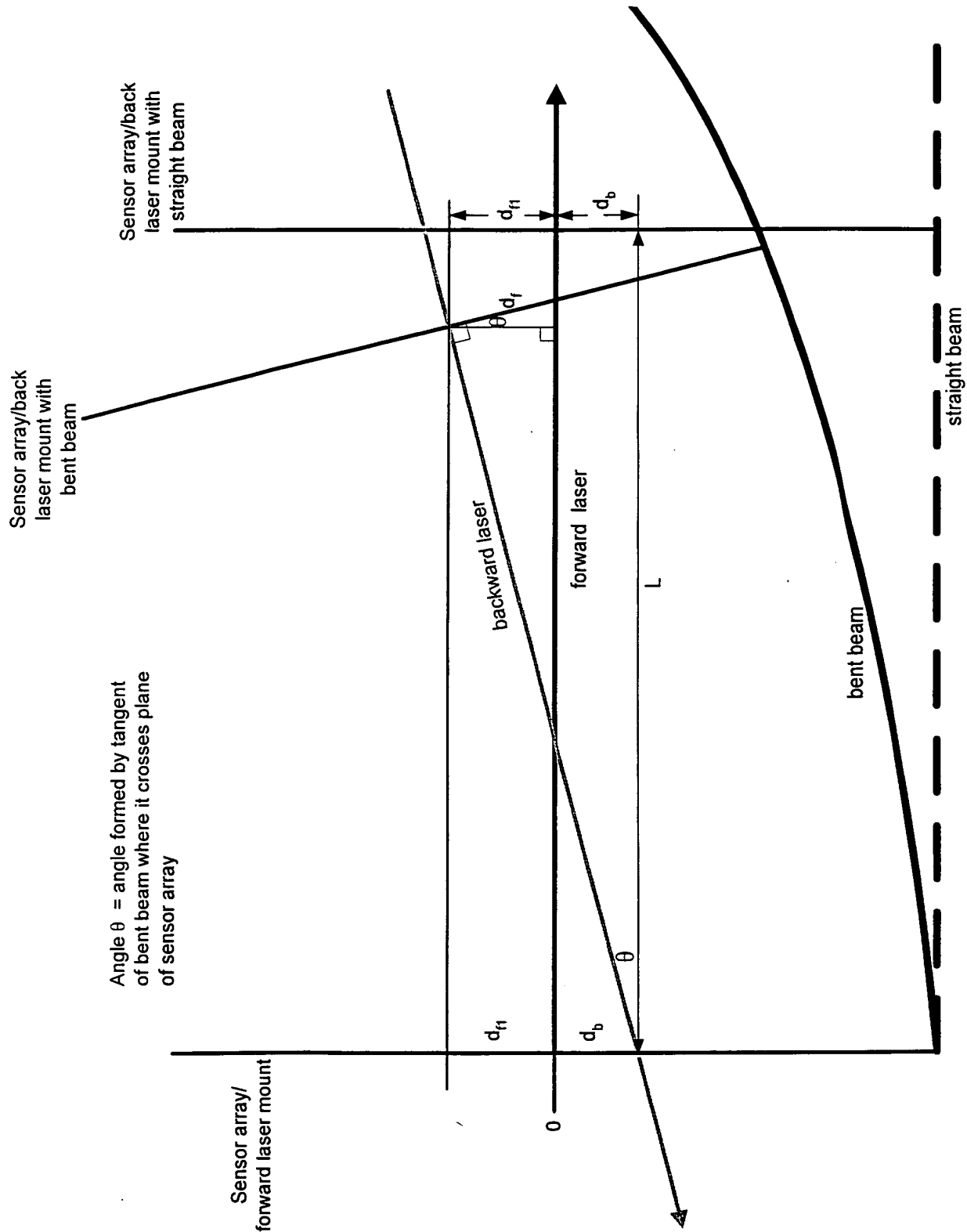
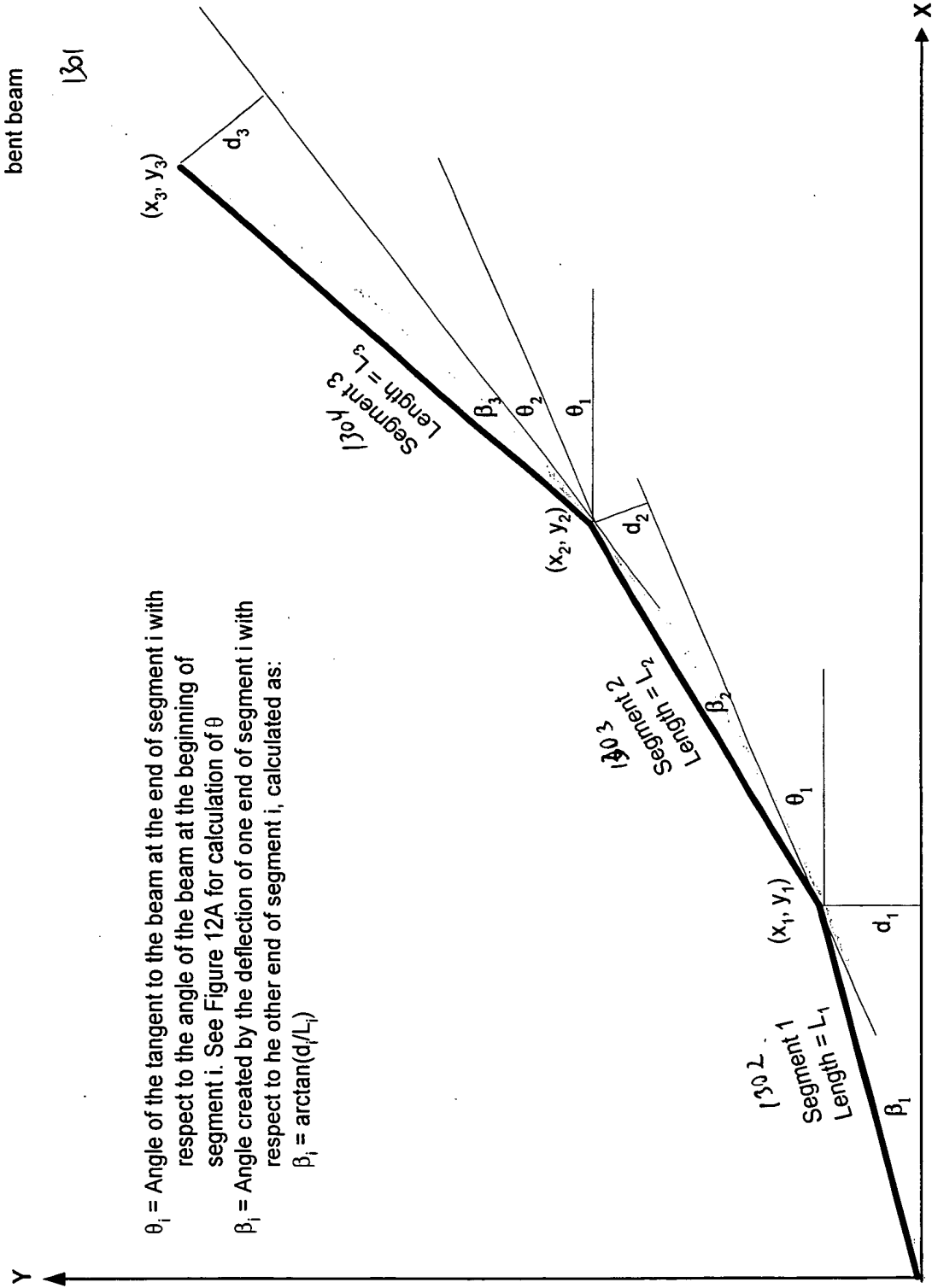


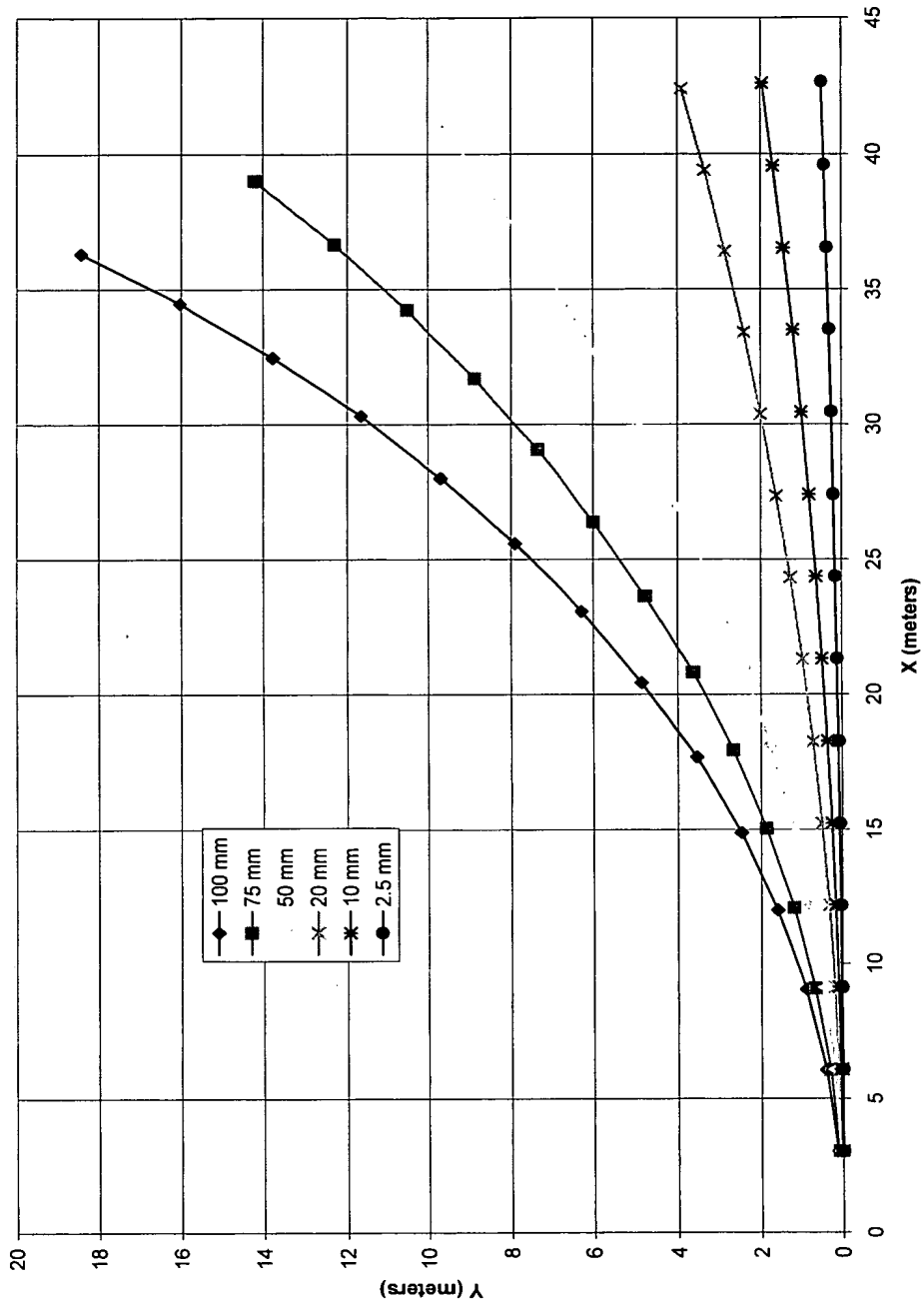
Figure 12A  
 Segment with Sensor Arrays Showing Calculation of Tangent Angle of the Beam at the End of the Segment

Figure 13  
 Deflected Beam with Three Sensor Segments





**Figure 14. Linear Beam Shapes With Parametric Deflections**  
XY vs Constant Segment Deflection  
14 segments each 3.048 meters (10 feet) long



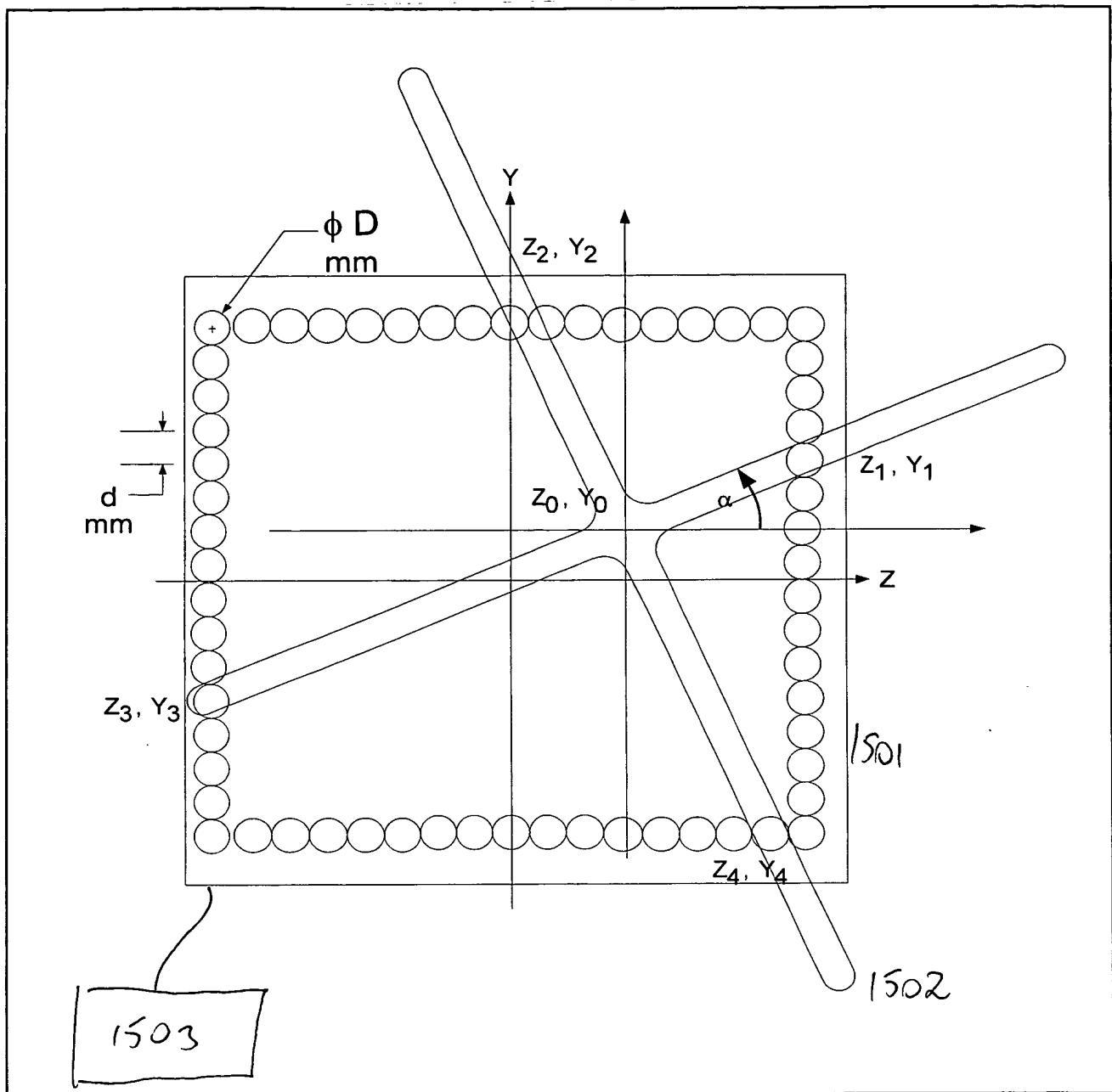


FIGURE 15: THREE-AXIS LASER CROSSHAIRS AND SENSOR TARGET

Figure 16. Simplified view of 3-axis segment

